

DESCRIPTION
Unit Cutting Dough Surface in Equal Depth

5 This invention pertains to the unit which performs the cutting operation of the product surface with a knife automatically at a certain desired depth based on the upper surface profiles of the bread doughs.

10 Prior to this invention, the cutting operation of bread doughs was performed manually one by one. In the sample models of this unit developed subsequently, a circular saw or a knife triggered with a motor is used as a cutting knife and the movement of the parts on the product is realized not as per the upper surface profile of the products, but on a linear basis at a certain distance [Illustration $\frac{1}{4}$ (A)] in parallel with the lower ground. In this invention, on the other hand, as the cutting movement is realized with reference to the upper surface profile of the product, the cutting depth [Illustration $\frac{1}{4}$ (B)] always remains at the same depth according to the upper surface profile of the product.

15 For the operation of this unit, the products are preferably lined on a band which is triggered by a reducer. The products on the band are brought to the cutting position determined with a driver-motor driving system on a time basis. In the aftermath, the cutting knife group is moved in the cutting direction by means of the trigger belt (8) triggered with reducer [Illustration 2/4 and $\frac{3}{4}$] (7) on the rail where it is bedded. During this movement, the product surface profile reference information is perceived with a laser sensor (4) placed within the system. Here, the position adjustment of the laser sensor is performed with a mechanism controlled in three different axles (3). In order to follow this reference information, the cutting knife group is moved with a servo motor (6) in the cutting depth direction. The information as to the quantity of movement is perceived via an encoder in the motor shaft. Due to an enclosed cycle, the cutting operation is performed so as to allow the cutting depth to be at equal distances to the upper surface profile of the dough on an automatic basis.

20 One or two cutting blades (1) may be available on the cutting knife group. The cutting knife group in the single cutting knife system performs its movement in a single cutting direction.

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5 In double cutting knife system, on the other hand, the cutting knife group
is moved in both cutting directions automatically. But, each cutting knife
performs the cutting operation in only one direction. The positions of the
cutting knives are changed with a pneumatic piston (5). When the cutting
knife group completes its movement in cutting direction in one period, the
position of the cutting knife enters into the water in a container (9) at the
time of its change with a pneumatic piston. During the course of the
movement, the cutting group continues its movement in the other period
10 and finally comes to the point where the second water container is placed.
Here, the connection of the cutting knives is performed with a mechanism
(2) which can be easily dismounted and mounted without need for any
adjustment.

15 An additional cutting knife mechanism can be incorporated in this unit as
a 4th axis, optionally, and a single or multiple cutting operation can be
obtained in length or breadth on the manufacture.

20 This unit can be easily used in the companies which make mass
production in bread manufacture sector. Following the resting operation
of the bread doughs, the cutting operation carried out on the doughs is
thus performed as per the intended direction rapidly with the mounting of
25 this unit on the band system.

The line of the knife at previous art is mentioned in figure ¼(a) and the
line of the knife in this system is mentioned in the figure ¼(b).

30 The left side perspective general view of the unit that cuts in equal depth
of dough surface is given in the Figure 2/4.

35 The right side perspective general view of the unit that cuts in equal depth
of the dough surface is given in Figure ¾. The intelligent blading system
rear view is given in Figure 4/4.

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